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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/524,186	02/08/2005	Christian Karnutsch	12406-107US1/P202,0691 US	2670
26161	7590	03/20/2006	EXAMINER	
FISH & RICHARDSON PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			HARRISON, MONICA D	
			ART UNIT	PAPER NUMBER
			2813	
DATE MAILED: 03/20/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/524,186

Applicant(s)

KARNUTSCH ET AL.

Examiner

Monica D. Harrison

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 February 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2/8/05
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 9 is rejected under 35 U.S.C. 102(e) as being anticipated by Tanaka et al (6,530,991 B2).

2. Regarding claim 9, Tanaka et al discloses a radiation-emitting semiconductor chip based on AlGaInP comprising - a substrate (12); - a semiconductor layer sequence (14) applied to said substrate and comprising a photon-emitting active layer (22); and - a transparent decoupling layer (16) disposed on said semiconductor layer sequence (14), characterized in that - said substrate (12) is formed of germanium (column 23, lines 33-67 thru column 24, lines 1-14).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al (6,530,991 B2) in view of Bour et al (5,003,548).

3. Tanaka et al discloses all above claimed subject matter except  $Ga_x(In_yAl_{1-y})_{1-x}P$  wherein  $.8 \leq x$  and  $0 \leq y \leq 1$ , particularly GaP (claim 10) nor the thickness of the decoupling layer being between  $1\mu m$  to  $10\mu m$ , particularly between  $2\mu m$  to  $10\mu m$  (claim 11).

Bour et al discloses  $Ga_x(In_yAl_{1-y})_{1-x}P$  wherein  $.8 \leq x$  and  $0 \leq y \leq 1$ , particularly GaP and the thickness of the decoupling layer being between  $1\mu m$  to  $10\mu m$ , particularly between  $2\mu m$  to  $10\mu m$  (column 1, lines 63-67 thru column 2, lines 1-44). However, Bour does not disclose the specified values and ranges for the transparent decoupling layer.

It is obvious, at the time the invention was made, for one having ordinary skill in the art, to provide a transparent decoupling layer having a value  $.8 \leq x$  and  $0 \leq y \leq 1$  and a thickness in the range of  $1\mu m$  to  $10\mu m$  or  $2\mu m$  to  $10\mu m$ , since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the "optimum range" involves only routine skill in the art. In re Aller, 105 USPQ 233 (1955).

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al (6,530,991 B2) in view of Bour et al (5,003,548).

4. Regarding claim 1, Tanaka et al discloses a method of fabricating a radiation-emitting semiconductor chip based on AlGaInP, comprising the method steps of: preparing a substrate (12); applying to said substrate a semiconductor layer sequence comprising a photon-emitting active layer (22); and applying a transparent decoupling layer (16), wherein said

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substrate (12) is formed substantially of germanium (column 23, lines 33-67 thru column 24, lines 1-14). However, Tanaka et al does not disclose said transparent decoupling layer (16) is applied in a temperature range extending no higher than 800C.

Bour et al discloses said transparent decoupling layer (16) is applied in a temperature range extending no higher than 800C (column 2, lines 9-44).

It is obvious, at the time the invention was made, for one having ordinary skill in the art, to modify Tanaka et al with the teachings of Bour et al for the purpose of applying temperature to a transparent decoupling layer in order to help with the epitaxial growth rate.

5. Regarding claim 2, Bour et al discloses wherein said transparent decoupling layer is applied with the use of tertiary butyl phosphine as a phosphorus source (column 2, lines 37-38).

6. Regarding claim 3, Bour et al discloses wherein said transparent decoupling layer is applied at a temperature below 780C, preferably below 750C (column 2, lines 9-44)

7. Regarding claim 4, Bour et al discloses wherein said transparent decoupling layer is applied at a temperature of about 700C (column 2, lines 9-44).

8. Regarding claim 5, Bour et al discloses wherein said transparent decoupling layer is applied with the use of trimethyl gallium as a gallium source (column 3, lines 58-59).

9. Regarding claim 6, Bour et al discloses wherein said transparent decoupling layer is grown by organometallic vapor-phase epitaxy (OMVPE) (column 2, lines 33-38).

10. Regarding claim 7, Bour et al discloses wherein said decoupling layer comprises  $\text{Ga}_x(\text{In}_y\text{Al}_{1-y})_{1-x}\text{P}$  wherein  $.8 \leq x$  and  $0 \leq y \leq 1$ , particularly GaP (column 1, lines 63-67 thru column 2, lines 1-44). However, Bour et al does not disclose the specified ranges of x and y.

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It is obvious, at the time the invention was made, for one having ordinary skill in the art, to provide a transparent decoupling layer having a value  $.8 \leq x$  and  $0 \leq y \leq 1$ , since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the "optimum range" involves only routine skill in the art. *In re Aller*, 105 USPQ 233 (1955).

11. Regarding claim 8, Bour et al discloses wherein said transparent decoupling layer is grown with a V:III ratio of 5 to 20, preferably of about 10 (column 2, lines 9-44).

### *Conclusion*


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica D. Harrison whose telephone number is 571-272-1959. The examiner can normally be reached on M-F 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on 571-272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Monica D. Harrison  
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mdh  
March 15, 2006

  
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